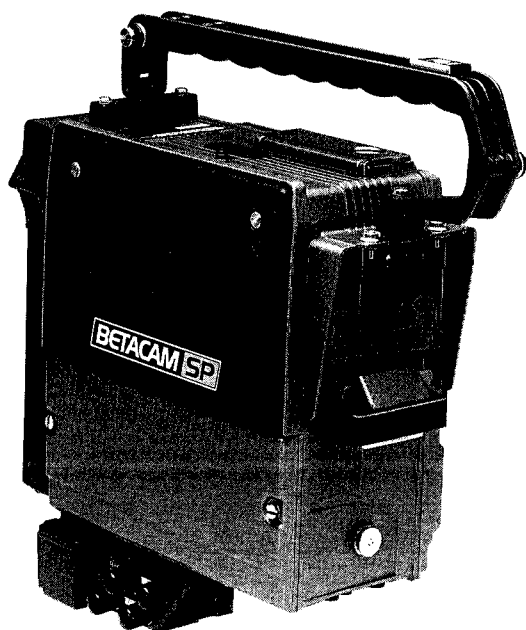


SONY

VIDEOCASSETTE RECORDER

BVV-5PS



BETACAM SP™

OPERATION MANUAL

2nd Edition (Revised 2)

Serial No. 10661 and Higher

EBU N-10 LEVEL

WARNING

For the customers in the USA

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a computing device pursuant to Subpart J of Part 15 of FCC rules.

For the customers in Canada

This apparatus complies with the Class A limits for radio noise emissions set out in Radio Interference Regulations.

Pour les utilisateurs au Canada

Cet appareil est conforme aux normes Class A pour bruits radioélectriques, spécifiés dans le Règlement sur le brouillage radioélectrique.

CAUTION

Be careful to use the correct AC adaptor. In Europe, use the AC-500CE (it runs on 220 V AC). In the U.S.A. and Canada, use the AC-500 (it runs on 120 V AC).

ATTENTION

Veiller à utiliser l'adaptateur d'alimentation secteur correct. En Europe, utiliser l'AC-500CE (il fonctionne sur secteur de 220 V) tandis qu'aux Etats-Unis et au Canada, utiliser l'AC-500 (il fonctionne sur secteur de 120 V).

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The operation of the "Betacam" system is described in the operation and maintenance manual of the camera. Please refer to it for details.

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Le fonctionnement du système "Betacam" est décrit dans le mode d'emploi et de maintenance de la caméra. Prière de s'y reporter pour les détails.

SPECIFICATIONS

General

Power requirements	DC 12 V $\pm 5\%$ V with a battery pack NP-1 or NP-1A (Ni-Cd, 1.5 Ah) For AC operation: use AC-500CE (Europe)/500 (USA and Canada) AC power adaptor (optional)
Power consumption	14 W (with metal tape, 12 V) Save mode: 2 W
Operating temperature	0°C to 40°C (32°F to 104°F)
Operating humidity	Less than 85% (relative humidity)
Storage temperature	-20°C to +60°C (-4°F to +140°F)
Weight	Unit: Approx. 3.5 kg (7 lbs 11 oz) Battery pack NP-1, NP-1A: 0.7 kg (1 lb 8 oz), BP-90: 1.7 kg (3 lbs 12 oz) BP-90A: 1.6 kg (3 lbs 8 oz)
Dimensions	Approx. 116 × 244 × 223 mm (w/h/d) (4 $\frac{5}{8}$ × 9 $\frac{5}{8}$ × 8 $\frac{7}{8}$ inches)
Video cassette	$\frac{1}{2}$ -inch cassette for Betacam Metal tape: BCT-5M/10M/20M/30M or equivalent Oxide tape: BCT-5G/10G/20G/30G or equivalent
Tape speed	101.5 mm/sec
Recording/playback time	36 min. (with BCT-30M)
Fast forward time	Less than 5.5 min. (with BCT-30M)
Rewind time	Less than 3.5 min. (with BCT-30M)

Video (with standard playback machine)

		Metal tape	Oxide tape
Bandwidth	Luminance (50%)	25 Hz to 5.5 MHz ± 0.5 dB	25 Hz to 4.0 MHz ± 0.5 dB
	Colour difference (50%)	25 Hz to 1.5 MHz ± 0.5 dB	25 Hz to 1.5 MHz ± 0.5 dB
Signal-to-noise ratio	Luminance	More than 48 dB	More than 46 dB
	Colour difference	More than 48 dB	More than 45 dB
K-factor (2T Pulse)		Less than 2%	Less than 3%
Y/C delay		Less than 20 nsec	Less than 20 nsec
Low frequency non-linearity		Less than 3%	Less than 4%

Audio (with standard playback machine)

	Metal tape		Oxide tape LNG
	AFM	LNG	
Frequency response (20 dB below peak level)* ¹	20 Hz to 20 kHz ± 0.5 dB	50 Hz to 15 kHz ± 1.5 dB	50 Hz to 15 kHz ± 3.0 dB
Signal to noise ratio* ²	More than 68 dB	More than 62 dB	More than 58 dB
Distortion (at 1 kHz) at peak level* ¹ at 0 VU level	Less than 3% Less than 0.6%	Less than 3% Less than 1.5%	Less than 3% Less than 2%
Crosstalk (at 1 kHz)	Less than -65 dB	Less than -55 dB	
Wow and flutter (DIN45507)	—	Less than 0.15%	
Depth of erasure (at 1 kHz)	—	More than 65 dB	

*1) peak level—AFM: +19 VU, LNG: +8 VU

*2) referred to peak level, weighted CCIR468-3, with Audio N.R.

Signal inputs

Video (from the camera head, 50-pin) for 100% color bars

Luminance 1.0 Vp-p, 1 kohms

Chrominance R-Y: 0.7 Vp-p, 1 kohms

B-Y: 0.7 Vp-p, 1 kohms

AUDIO IN CH-1/CH-2/CH-3/CH-4 (XLR 3-pin)

-60 dB/+4 dB selectable, high impedance, balanced.

GENLOCK VIDEO IN (BNC) 1.0 Vp-p, 75 ohms

TC IN (BNC) 0.5 V to 18 Vp-p, 10 kohms

Signal outputs

ENCODE VIDEO OUT (BNC) 1.0 Vp-p, 75 ohms

TC OUT (BNC) 1.0 Vp-p, 75 ohms

EARPHONE (mini jack) 8 ohms, $-\infty$ to -20 dB variable

PB ADAPTOR (20-pin)

Supplied accessories

Shoulder strap (1)

50-pin cap (1)

Battery case (1)

4-pin cap (2)

Screws (M4) (2)

Design and specifications are subject to change without notice.

The input level of a component signal conforms to the
EBU "N-10" standard.




Notice on moisture condensation

Moisture may condense on the drum assembly if the set is moved directly from a cold to a warm location or if the set is used in a very humid place. This may cause damage to the tape to adhered the head drum. To avoid this, take the following precautions.

- When the set is moved directly from a cold to a warm location, be sure to remove the cassette.
- Before inserting a cassette, set the POWER switch to ON and check that the HUMID indicator on the display window does not light. If it lights, wait until the HUMID indicator goes off before inserting a cassette.
- If it seems that moisture has been condensed in the VTR with the cassette inserted, proceed as follows:

1 Set the CAMERA/VTR switch to VTR SAVE.

2 Turn on the unit.

3 When the HUMID indicator lights up, press the  EJECT button and remove the cassette.

When the indicator does not light, there is no condensation.

Cleaning the heads

Use the BCT-5CLN cleaning cassette to clean the heads. Carefully read the instruction manual furnished with the BCT-5CLN. Excessive or incorrect use of the cleaning cassette may shorten the head life.



NOTES ON OPERATION

Do not use the unit in extremely hot or cold locations or in places where the humidity is high. The unit is designed to operate in temperatures ranging from 0°C to 40°C (32°F to 104°F). Avoid sudden temperature changes, particularly from an extremely cold location to a warm one, as this is conducive to condensation of moisture on the head drum assembly.

- Do not subject the unit to unnecessary vibration when carrying it.
- If the unit is not used for an extended period of time, remove the battery pack.

Playback

The playback picture can be monitored through the viewfinder or on the TV connected to the PB ADAPTOR of this unit.

1 Turn the power on.



2 Insert a cassette tape.



3 Press the ► PLAY button.

To stop playback, press the ■ STOP button.

To advance the tape rapidly, press the ►► F FWD button.

To rewind the tape, press the ◀◀ REW button.













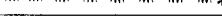






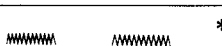








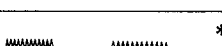




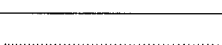


- The playback picture on the viewfinder screen is monochrome.
- Both the longitudinal and AFM sound can be played back.

To check the chrominance signal of the playback picture
Keep pressing the CTDM PB button.
Chrominance signals of the playback picture appear.


To playback on a TV or color monitor
Use the VA-500P playback adaptor (optional).

WARNING SYSTEM






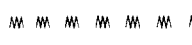


The indications and lamps in the viewfinder, the indicators on the display window, the WARNING lamp and the alarm from the speaker or the earphone serve to advise the operator of the following operational states.

BVV-5PS				Camera			Condition	
Warning indicators		Warning lamp	Alarm sound	Lamps in the viewfinder				
Indicator	Lights or blinks			REC	TAPE 5M	BATT		
RF	 *	 *	 *				Video heads contamination Something wrong in the recording system	→ See A.
SERVO							Irregularity in servo	→ See B.
HUMID							Moisture condensation	→ See C.
			 **					
SLACK							Slack tape	→ See D.
TAPE END	 *	 *	 *				Tape nearly at its end	→ See E.
							End of tape	→ See F.
BATT	 *	 *	 *				Battery near end	→ See G.
							Battery end	→ See H.

* During recording ** During playback, fast forward or rewind

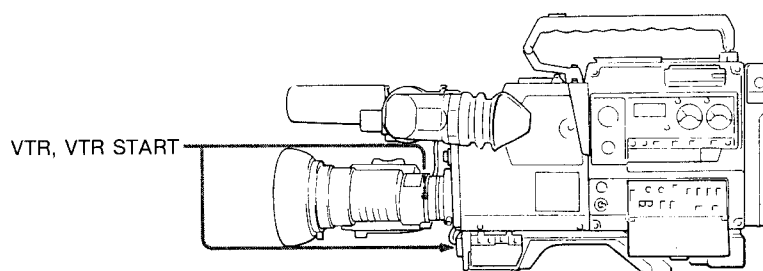
VTR operation and correction	
A	Recording continues. Recording may not be performed correctly. Head-cleaning is required.
B	Recording continued. Recording may not be performed correctly. Turn off the power and consult your nearest Sony dealer. The lamp may momentarily blinks when the tape starts running, but this is not a problem.
C	Recording continues as long as the tape does not stick to the head drum. If this happens, recording will stop and the tape will be unloaded. Playback, fast forward or rewind will stop.
D	Tape transport stops. Keep the  EJECT button pressed to remove the cassette. When the cassette cannot be ejected, see the Maintenance manual.
E	Tape transport continues.
F	Recording, playback or fast forward stops. Change cassettes or rewind the tape.
G	Tape transport continues.
H	Tape transport stops. Change batteries.

Lamps

Indicators	Lamps	Sound of alarm
 : Blinks in 1 Hz	 : Blinks in 1 Hz	 : In 1 kHz, 1 second interval
 : Lights up	 : Blinks in 4 Hz	 : In 1 kHz, 1/4 second interval
	 : Lights up	 : Continuous sound



5 Press the VTR START button or the VTR button and the recording begins.



During recording, the REC lamp (red) in the viewfinder is lit.



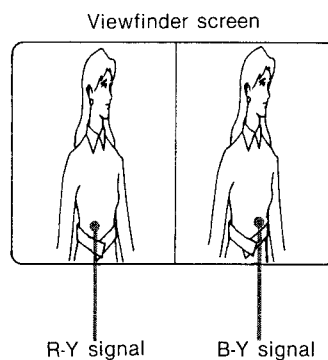
6 To stop recording, press the VTR START button or the VTR button again.
The VTR enters the pause mode and the REC lamp will go off.

To check the luminance signal during recording

Keep pressing the RET button on the lens. The playback picture will appear on the viewfinder screen. The playback sound of the audio channels 1 and 2 can also be monitored when the MONITOR SELECT LNG/AFM switch is set to LNG.

To check the chrominance signal during recording

Keep pressing the CTDM PB button of this unit and the RET button on the lens. The chrominance signals of the recording picture appear on the viewfinder screen in monochrome.



Note

Depending on the subject matter, disturbances in some parts of the picture in the viewfinder may occur during monitoring of the simultaneous playback. These disturbances, however, will not be recorded.

To check the last scene of the previous recording (recording review)

Press the RET button on the lens after recording.

The last two seconds of the recorded scene are played back and then the unit will enter the standby mode.

When the RET button is kept pressed, the last recorded picture can be seen for a maximum 10 seconds.

Recording review is possible only when the recording is longer than one second.

Frame-accurate backspace editing

As long as the cassette is not ejected, frame-accurate backspace editing can be made when the CAMERA/VTR switch on the camera is set to the VTR STBY.

Even if the CAMERA/VTR switch is in the VTR SAVE position, the unit will go into the frame-accurate backspace editing by simply pressing the VTR or VTR START button.

In this case, however, it takes a little longer to start recording (approx. 3 seconds).

To start frame-accurate backspace editing after the power has been turned off or the cassette has been ejected, or to record on a previously recorded tape, proceed with the following steps.

- 1** Find the point you want to start editing by monitoring the viewfinder screen, and stop the tape.
- 2** Press the RET button on the lens.
The starting point will be searched for.
- 3** Press the VTR or VTR START button.
Editing will begin.



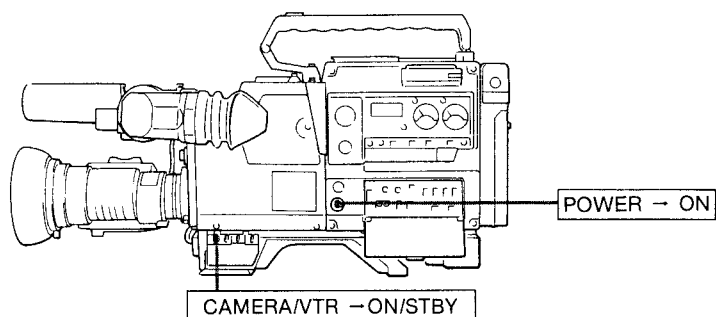
Alarm sound level adjustment

Use the volume control to adjust the alarm volume from the speaker or the earphone.
To cut off the alarm sound only, set the ALARM switch to OFF. To adjust the level of the alarm sound without affecting the other audio levels, see the Maintenance manual.

OPERATION

Recording

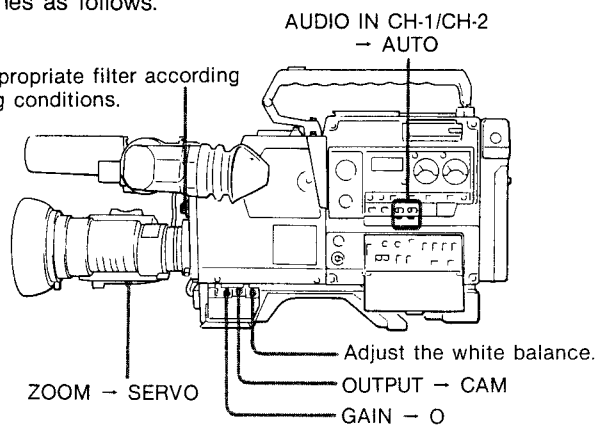
- 1** Turn the power on.



- 2** Insert a cassette tape.

- 3** Set the switches as follows.

Select the appropriate filter according to the lighting conditions.



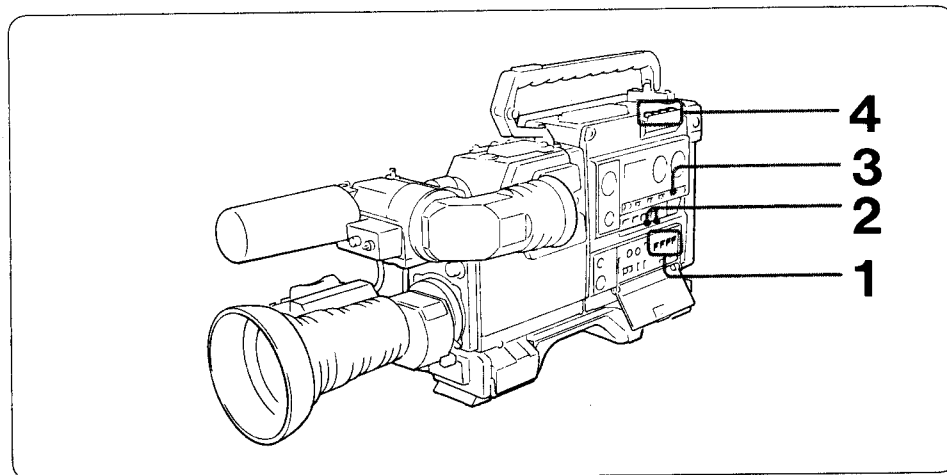
- 4** Point the camera at the subject, and adjust the focus and zoom.

Audio recording level adjustment

When adjusting the recording level of channel 1 or 2, set the AUDIO SELECT CH-1 or CH-2 switch to **AUTO**.

When adjusting the recording level of channel 3 or 4, or when adjusting the level of channel 1 or 2 manually, proceed with the following steps.

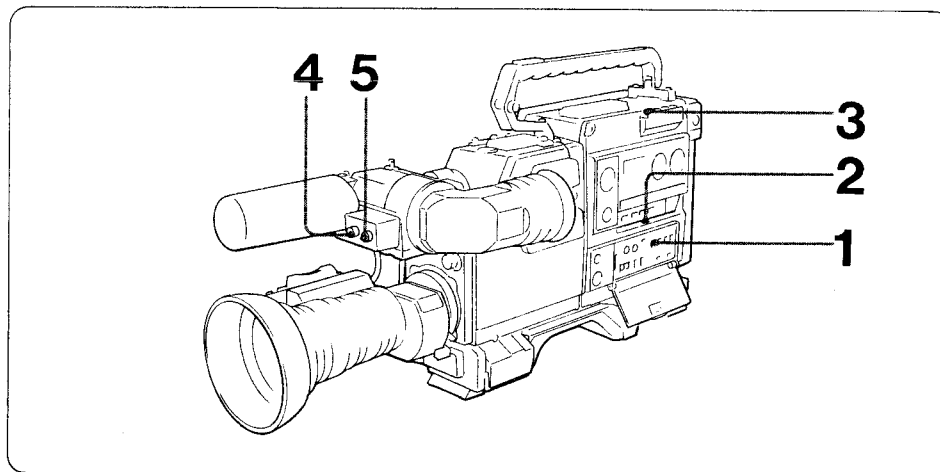
When a video camera BVP-3AP, BVP-5P or BVP-30P is used



- 1** Set the AUDIO IN CH-1 to CH-4 switches as follows;
To use the built-in microphone: **CAM**
To use an external microphone: **MIC**
To use other audio equipment: **LINE**
- 2** To adjust the level of audio channel 1 or 2, set the AUDIO SELECT CH-1 or CH-2 switch to **MAN**.
- 3** Set the MONITOR SELECT LNG/AFM switch.
To adjust audio channel 1 or 2 level: **LNG**
To adjust audio channel 3 or 4 level: **AFM**
- 4** Turn the AUDIO LEVEL CH-1 to CH-4 controls so that the meter pointer swings up to 0 VU at their maximum deflection.

Audio channel 1 level adjustment

The level of the audio channel 1 can be adjusted on the camera.



- 1** Set the AUDIO IN CH-1 switch as follows;
To use the built-in microphone: **CAM**
To use an external microphone: **MIC**
To use other audio equipment: **LINE**
- 2** Set the AUDIO SELECT CH-1 switch to **MAN**.
- 3** Turn the AUDIO LEVEL CH-1 control on the VTR fully clockwise.
- 4** Set the AUDIO/FILTER switch on the camera to **AUDIO**.
- 5** Turn the AUDIO CH-1 control on the camera so that the 1 through 4 lamps of the FILTER/AUDIO indicator is usually lit and the red indicator is momentarily lit at the maximum input.

When a video camera BVP-1P is used

The level of the audio channel cannot be adjusted on the camera. Adjust the level with the AUDIO LEVEL CH-1 to CH-4 controls on the VTR.

Notes on channel 1 adjustment

- The maximum attenuation of the AUDIO CH-1 control on the camera is approximately 20 dB. If an appropriate level cannot be obtained within this range, adjust the level by using the AUDIO LEVEL CH-1 control on the VTR.
- The FILTER/AUDIO indicator in the viewfinder shows the level responding to the peak signal. When a sine wave is input and the level meter pointer deflects to 0VU, the indicator is designed to indicate 3. When audio signals are input and the level meter pointer deflects to around 0VU, the indicator indicates 4. The viewfinder indication corresponds to that of the level meter as follows;

FILTER AUDIO indicator	1	2	3	4	
Level meter indicator of sine wave.	-6	-4	0+3+6	(VU)	



F Check the audio level of the external microphones

1 Connect the microphones to AUDIO IN CH-1 to CH-4 connectors.



2 Set the AUDIO IN CH-1 to CH-4 switches to **MIC**.



3 Point the external microphones to the sound source.



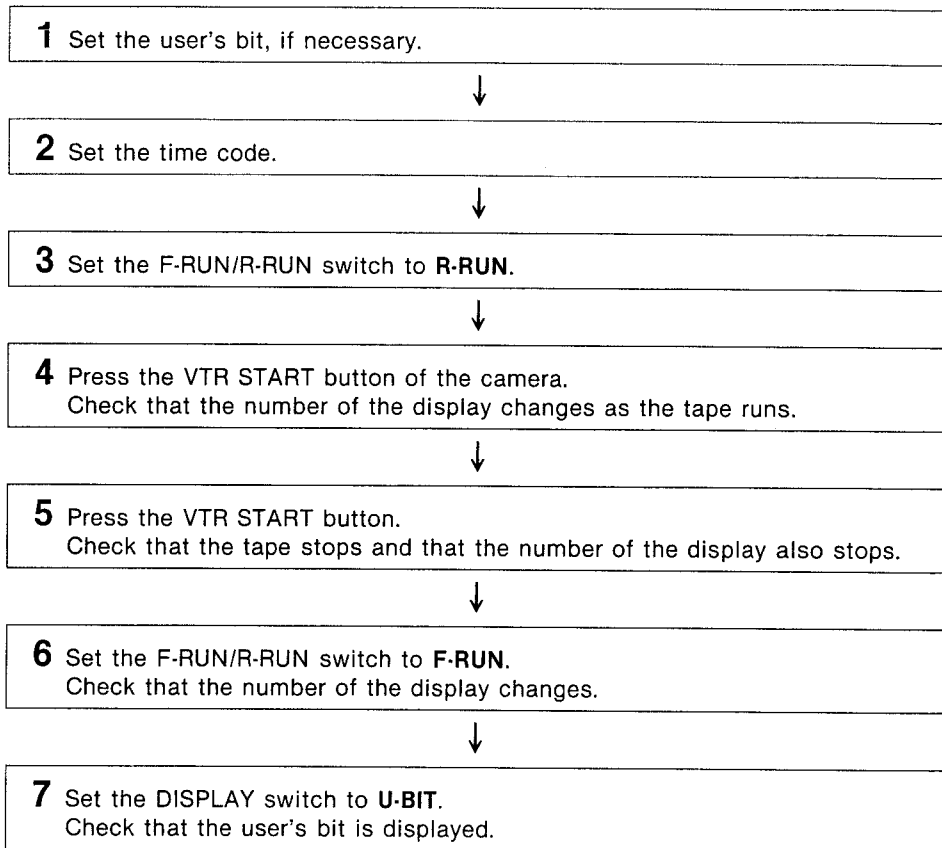
4 Set the MONITOR SELECT LNG/AFM switch to **LNG** (to check the level of CH-1 and CH-2).
Check that the level meter pointer deflects.



5 Set the MONITOR SELECT LNG/AFM switch to **AFM** (to check the level of CH-3 and CH-4).
Check that the level meter pointer deflects.

Checking the time data

Check the time code and the user's bit



To check the real time

Set the REAL TIME switch to **SET**. The real time is displayed regardless of the DISPLAY switch position.
In this case, the time will stop on the display window.



B Check the automatic audio recording level adjustment of channels 1 and 2

1 Set the AUDIO SELECT CH-1 and CH-2 switches to **AUTO**.



2 Set the AUDIO IN CH-1 and CH-2 switches to **CAM**.



3 Set the MONITOR SELECT LNG/AFM switch to **LNG**.



4 Point the microphone to an audio source.
Check that both level meter pointers deflect according to the sound volume.

C Check the manual audio recording level adjustment

1 Set the AUDIO IN CH-1 to CH-4 switches to **CAM**.



2 Set the AUDIO SELECT CH-1 and CH-2 switches to **MAN**.



3 Turn the AUDIO LEVEL CH-1 and CH-2 controls clockwise.
Check that both level meter pointers deflect.



4 Set the MONITOR SELECT LNG/AFM switch to **AFM**.



5 Turn the AUDIO LEVEL CH-3 and CH-4 controls clockwise.
Check that both level meter pointers deflect.

D Check the earphone and speaker

1 Set the CAMERA/VTR switch of the camera to **VTR STBY**.



2 Set the MONITOR switch to **EE**.



3 Turn the LEVEL control.
Check that the sound volume from the speaker changes.



4 Connect an earphone to the EARPHONE jack.
Check that the sound from the speaker is cut off and that the sound is heard from the earphone.



5 Turn the LEVEL control.
Check that the sound volume from the earphone changes.

E Check the audio confidence function

1 Set the MONITOR switch to **PB**.



2 Set the AUDIO IN CH-1 switch to **CAM**, and the CH-2 switch to **other position**.



3 Press the VTR START button.
Check that the sound from the microphone is heard.



4 Set the AUDIO IN CH-2 switch to **CAM**, and CH-1 switch to **other position**.
Check that the sound from the microphone is heard.

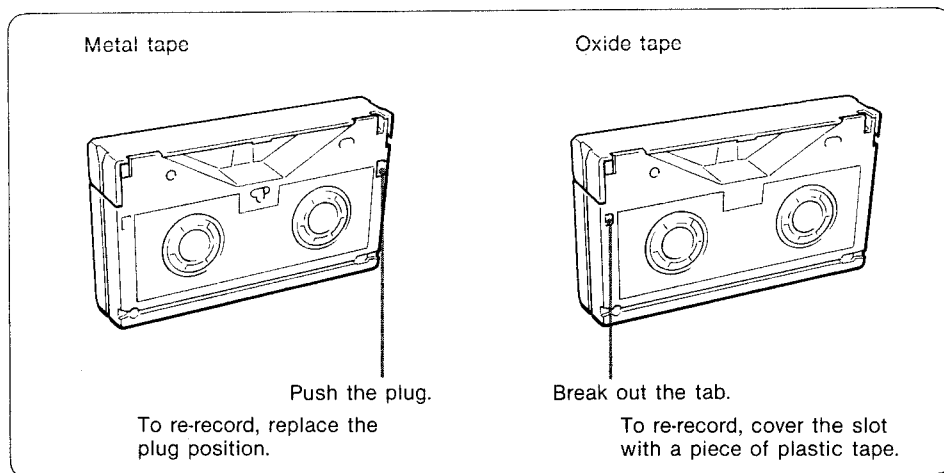
Note

The audio confidence function of the channels 3 and 4 cannot be obtained.

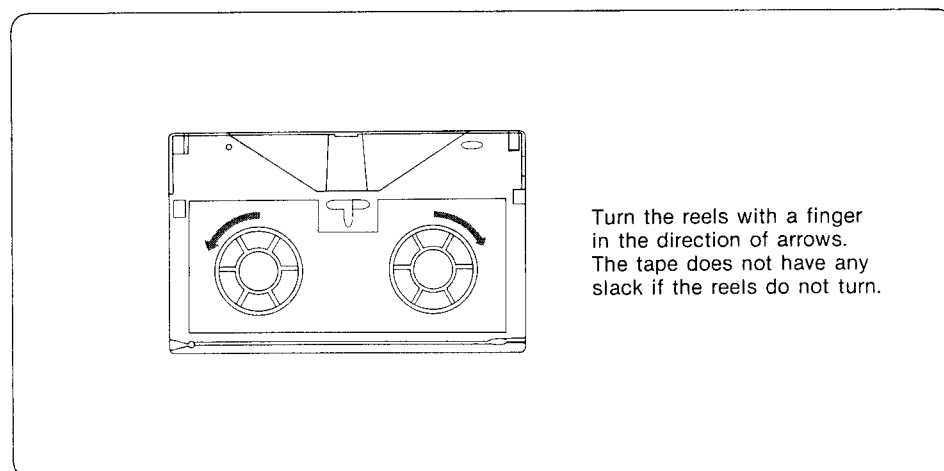


The tab on the cassette

To avoid erasing a previous recording, do as follows;



To check the tape slack



Checking the VTR

Proceed with [A] through [E] continuously.

[A] Check the tape transport

1 Set the F-RUN/R-RUN switch to **R-RUN**.



2 Set the DISPLAY switch to **CTL**.



3 Press the VTR START button of the camera.
Check that:

- The reel inside the cassette rotates.
- The figures on the display change as the tape runs.
- The REC lamp in the viewfinder lights.
- The RF and SERVO indicators on the display do not light up.



4 Press the VTR START button again.
Check that the tape stops and the REC lamp in the viewfinder goes off.



5 Press the VTR button on the lens.
Check that:

- The reel inside the cassette rotates.
- The figures on the display change as the tape runs.
- The REC lamp in the viewfinder lights.
- The RF and SERVO indicators on the display do not light up.



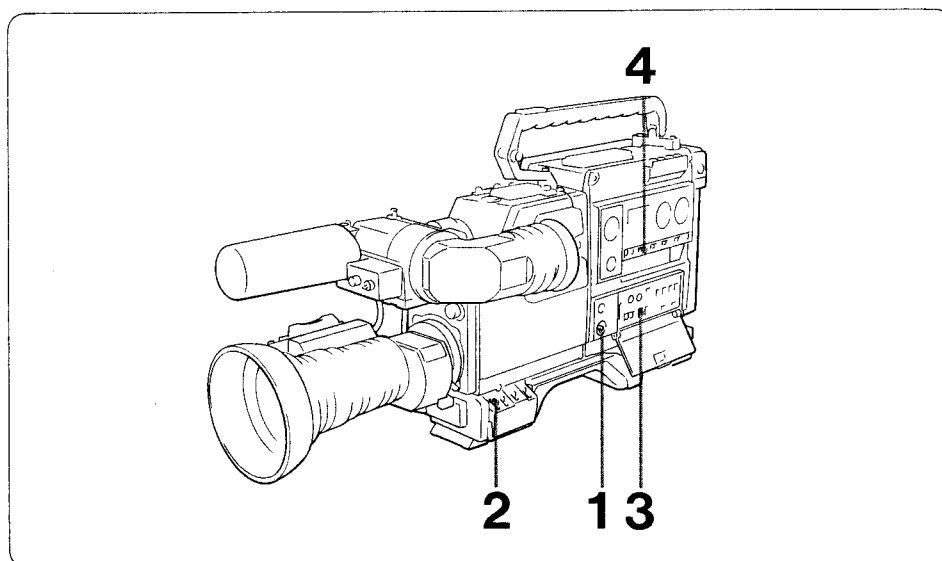
6 Press the VTR button again.
Check that the tape stops and the REC lamp in the viewfinder goes off.



7 Press the RESET button.
Check that the figure on the display is reset to "00:00:00:00".



8 Set the LIGHT switch to ON.
Check that the display window and the level meters are illuminated.



- 1 Set the POWER switch of the BVV-5PS to **ON**.
- 2 Set the CAMERA/VTR power switch on the camera to **ON**.
- 3 Set the F-RUN/R-RUN switch to **F-RUN**.
- 4 Set the DISPLAY switch to **TC**.
- 5 Supply the reference time code and the video reference signals to the VTR.
The time code will be locked.

The time code cable connecting the VTR and the master time code generator can be removed about 10 seconds after the time code slave-lock is completed.

When changing power source from the battery to the external power source during time code slave-lock

Connect the external power source to the DC IN jack before removing the battery pack.

If the battery is removed first, the time code slave-lock cannot be kept continuously to generate the time code correctly.

When both an external power source and a battery pack are connected during slave-lock

The unit is operated on external power, but it also draws power from the battery.

Notes

- In the slave-lock mode, only the time data is locked to the time data of the external time code generator. The user's bit can be set separately on each VTR. When you change the jumper, the time data and user's bit can be locked simultaneously. For details, refer to the Maintenance manual.
- The phase relation between the reference time code and the reference video signal should satisfy the EBU time code standards.
- After the time code is locked, wait for a few seconds until the sync generator of the camera is stable before setting the VTR in the record mode.

- After the time code is locked, the time code cable can be detached from the VTR. In this case, the accuracy of the time code generated by the BVV-5PS time code generator corresponds to that of the sync generator of the camera (± 0.3 frame/hour on BVP-3AP, BVP-5P, BVP-30P).
- In the slave-lock mode, keep the CAMERA/VTR switch on the camera to **ON**. If the switch is set to **PREHEAT**, or the POWER switch on the VTR is set to **OFF**, the built-in time code generator generates the time code, but the accuracy will be ± 3 frames/hour.
- The BVV-5PS is designed so that the output signal of the built-in time code generator is locked to the video signals based on the field 1 information from the video camera. In the slave-lock mode, the field 1 information is cut off automatically as the built-in time code generator is locked to the external time code generator. To resupply the field 1 information to the VTR, first cut off the time code from the external time code generator, and then set the F-RUN/R-RUN switch to **R-RUN** or **SET**.
- **When recording composite video signals using the VA-1VP or VA-5P in the slave-lock mode, make sure that the CAMERA/VTR power switch on the camera is not set to **SAVE**.**
Otherwise the time code will not be generated continuously as the VA-1VP or VA-5P will be in the power saving mode, and the composite sync signals to the built-in time code generator will be cut off in the **SAVE** mode.

OPERATION CHECK AND ADJUSTMENT

Preparation

1 Insert a fully-charged battery pack.



2 Set the POWER switch to ON.



3 Check that the HUMID indicator does not light.

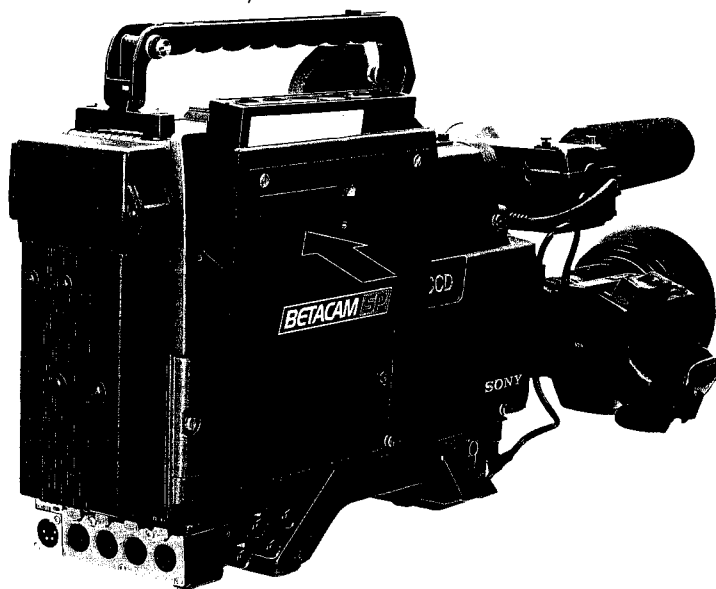


4 Check the battery.
Press the BATT CHECK button and check that the meter pointer deflects into the green zone.

CH-2/CH-4/BATT



5 Insert a cassette tape by pressing it down firmly, then push the cassette holder (as illustrated with the arrow) until it closes.



Check that the safety tab at the bottom of the cassette is in place and the tape does not have any slack.

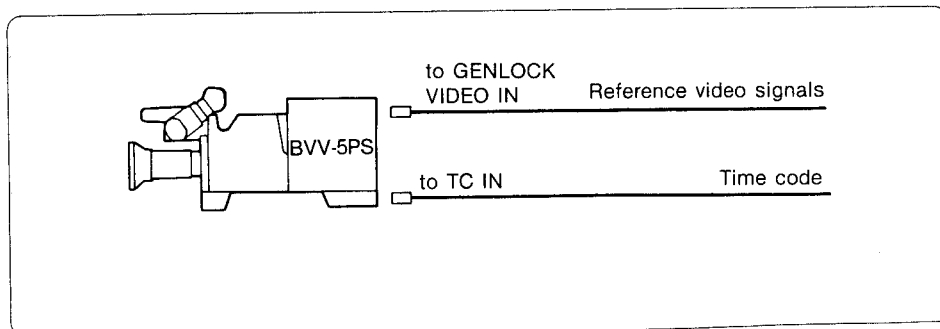


Time code slave-lock

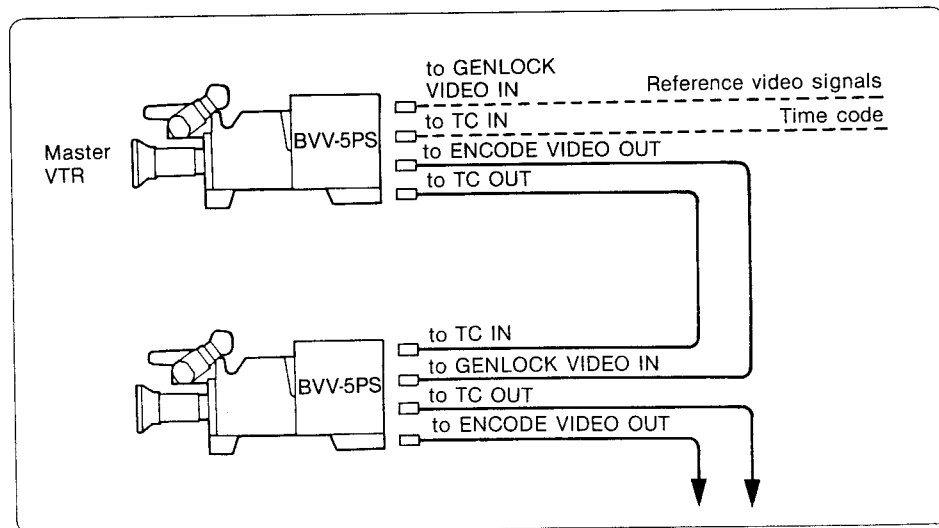
When the BVV-5PS is used together with "Betacam" series video cameras which can be locked to an external sync signal, the time code can be locked.

Connections

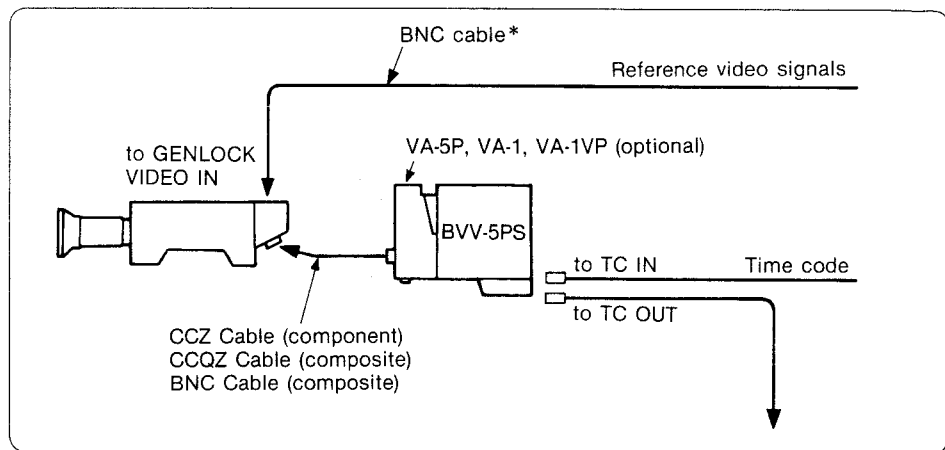
- 1 To lock the BVV-5PS to an external time code generator
(when used in a "Betacam" system)



- 2 To lock the time code generators of the BVV-5PS VTRs to one master VTR
(When used in a "Betacam" system)



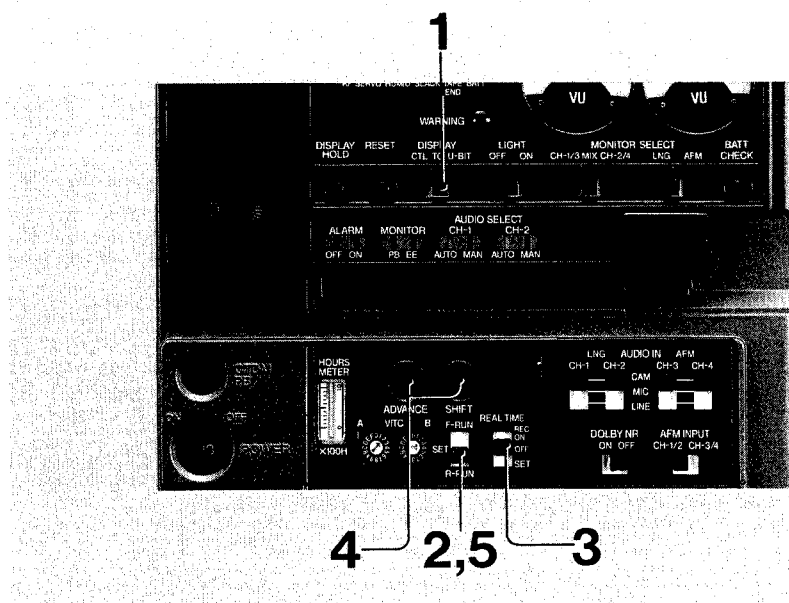
3 To use the BVV-5PS and the video camera separately



*** BNC cable**

Be sure to connect this cable to the video camera to maintain the color framing of the camera when recording the composite video signals with the built-in time code generator locked to an external time code generator.

User's bit setting



- 1 Set the DISPLAY switch to **U-BIT**.
- 2 Set the F-RUN/R-RUN switch to **SET**.
- 3 Set the REAL TIME switch to **OFF**.
- 4 Set the user's bit with the ADVANCE button and SHIFT button.
The data is displayed in hexadecimal notation.
- 5 Set the F-RUN/R-RUN switch to **F-RUN or R-RUN**.
The user's bit will be recorded on both the VITC and LTC.

The data of the user's bit is displayed in hexadecimal notation.

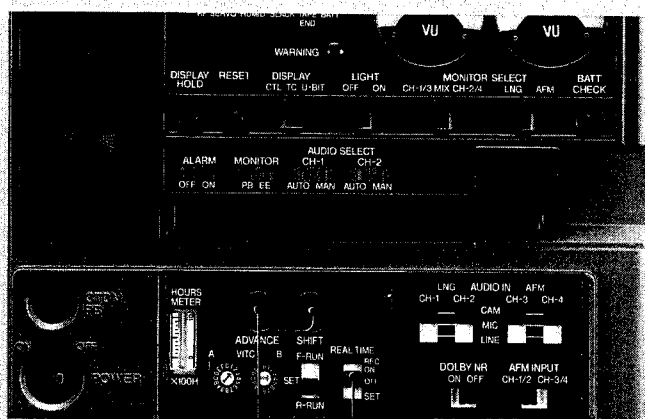
Figures A to F is indicated as follows;

	A	B	C	D	E	F
Display	<i>A</i>	<i>b</i>	<i>C</i>	<i>d</i>	<i>E</i>	<i>F</i>

Note

If you use both the time code and the user's bit, set the user's bit first. If you reverse this procedure, the time code will lose time as the time code generator stop while the user's bit is being set.

To set the real time into VITC user's bit



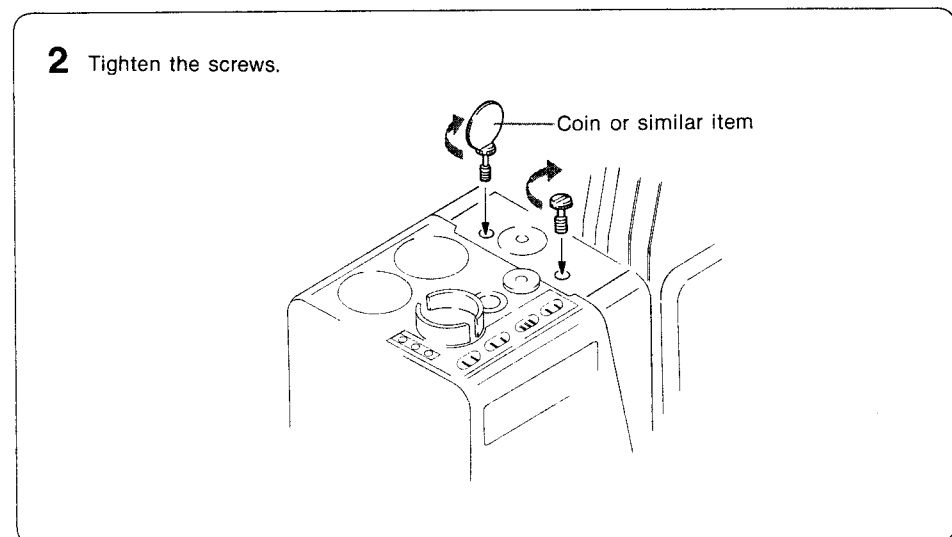
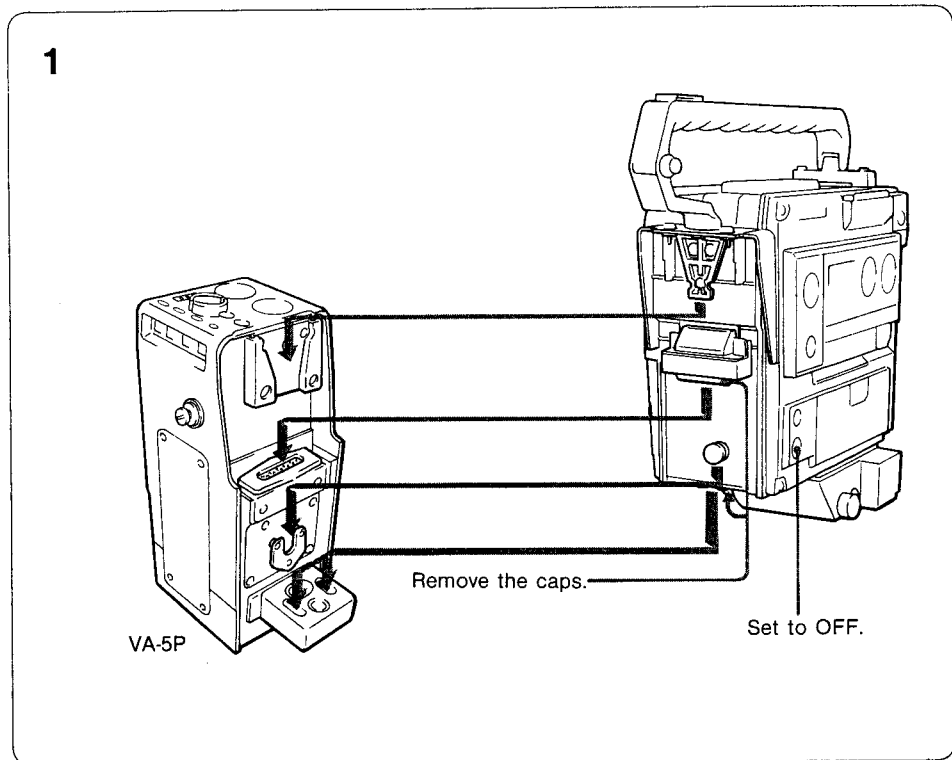
- 1** Set the REAL TIME switch to **SET**.
- 2** Set the real time with the ADVANCE button and SHIFT button.
- 3** Set the REAL TIME switch to **ON**.
The real time will be recorded on the VITC user's bit.
In this case, the user's bit you set is recorded on the LTC.

To display the real time set into VITC user's bit

Set the DISPLAY switch to U-BIT and keep pressing the DISPLAY HOLD button.

To set the real time into the LTC user's bit, change the jumper inside the unit. For details, refer to the Maintenance manual.

VA-5P VTR composite/component adaptor

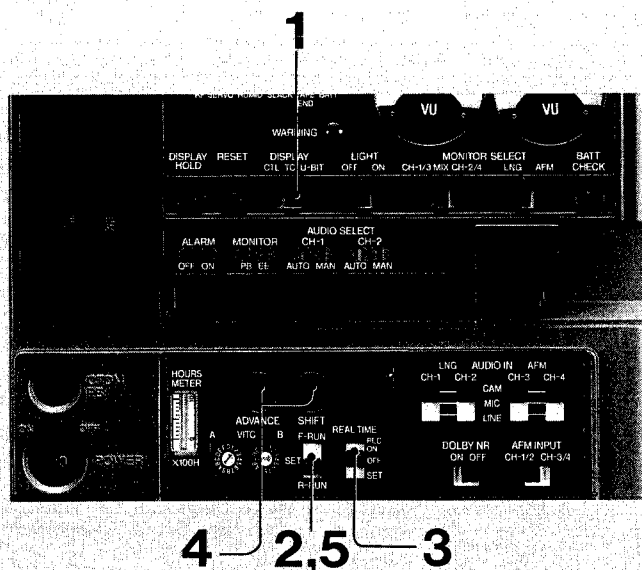


Note

The switches on the unit which are the same as those on the VA-5P do not function when connecting with the VA-5P.

TIME DATA SETTING

Time code setting



- 1 Set the DISPLAY switch to TC.
- 2 Set the F-RUN/R-RUN switch to SET.
- 3 Set the REAL TIME switch to ON or OFF.
- 4 Set the time code with the ADVANCE button and SHIFT button.
- 5 Set the F-RUN/R-RUN switch as follows.
To generate the time code with free run: **F-RUN**
To generate the time code with recording run: **R-RUN**

Note

The maximum time code is 23:59:59:24.

Keeping the time code during battery replacement

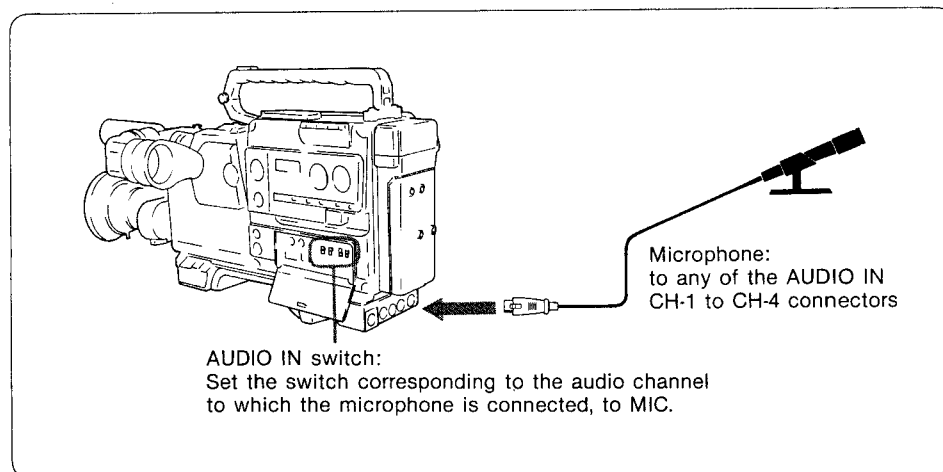
The back-up battery holds the time code when the battery is replaced. The back-up time is about 60 hours. (If the serial number of your unit is 11506 or less, the back-up time is about 18 minutes.)

CONNECTION

Audio recording from external microphones

4 microphones (maximum) can be connected to the AUDIO IN CH-1 to CH-4 connectors.

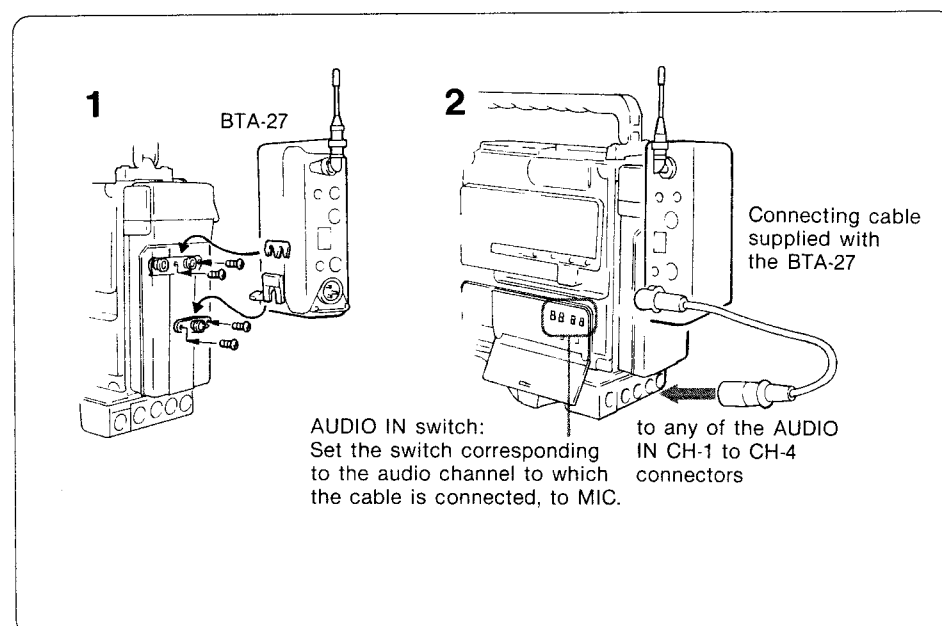
If the CH-1 + 48 V switch is set to ON when the microphone is connected to the AUDIO IN CH-1 connector, the unit will supply power to the microphone.



Audio recording using a wireless microphone

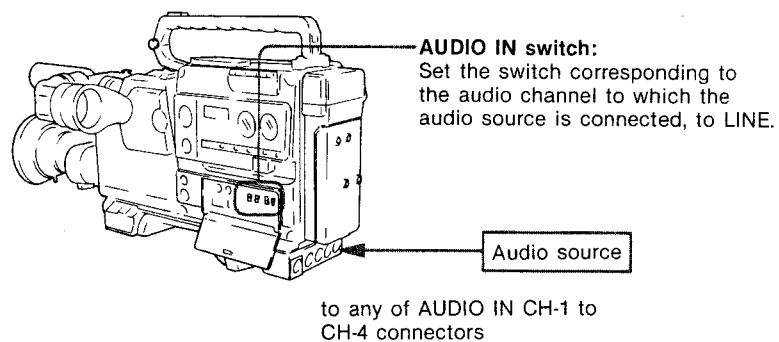
Use the WRR-27 UHF portable tuner, WRT-27 transmitter, WRT-57 wireless microphone, etc.

Attach the WRR-27 portable tuner in its case BTA-27 (optional).



For details on the wireless microphone system, see its instruction manual.

Audio recording from external equipment



Rechargeable battery pack—BP-90/90A

A fully-charged battery provides approximately 125 minutes of continuous operation with a BVP-5P video camera.

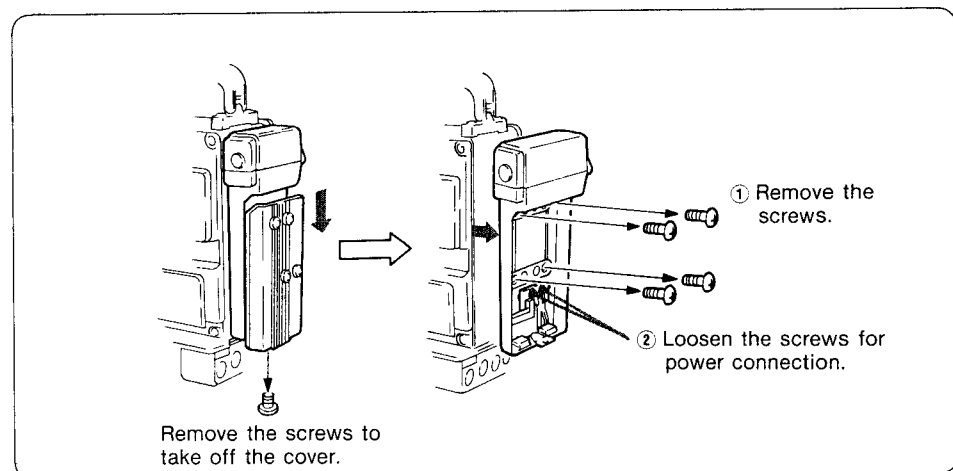
Charging

Before operating, always charge the battery pack using the BC-210CE battery charger. The charging period is approximately 2 hours at normal temperatures. For details on charging, read the instruction manual of the BC-210CE.

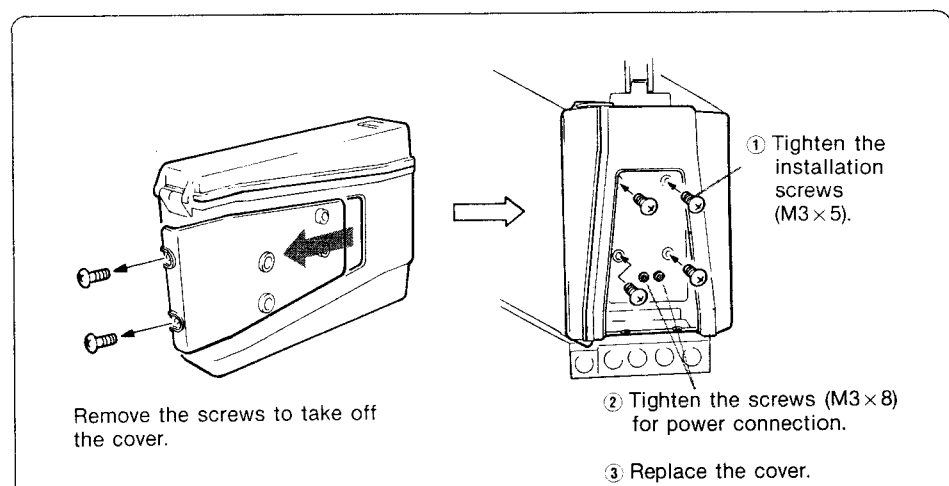
Battery installation

Install using the optional DC-500 battery case.

- 1 Remove the supplied battery case.



- 2 Attach the optional DC-500 battery case.



- 3 Insert a battery pack BP-90/90A.

Notes on using the battery pack and the external battery at the same time

When the battery pack is installed and when the external battery connected to the DC IN connector is low and needs to be charged, you can have the installed battery pack supply the power to continue the operation. Also, when the battery pack being used becomes weak, you can continue the operation by connecting the external battery. (However, noise may appear when you change the power source.)

- **In case that the battery as the external power source is low when the battery pack is installed**

Remove the DC output cord of the external battery from the BVV-5PS to change the power source from the external battery to the battery pack. Replace the external battery with a fully charged battery as soon as possible because the battery pack has already been partially consumed (the time of the continuous operation for the BVW-505P is approx. 10 minutes for the NP-1, and dozens of minutes for the BP-90/90A.)

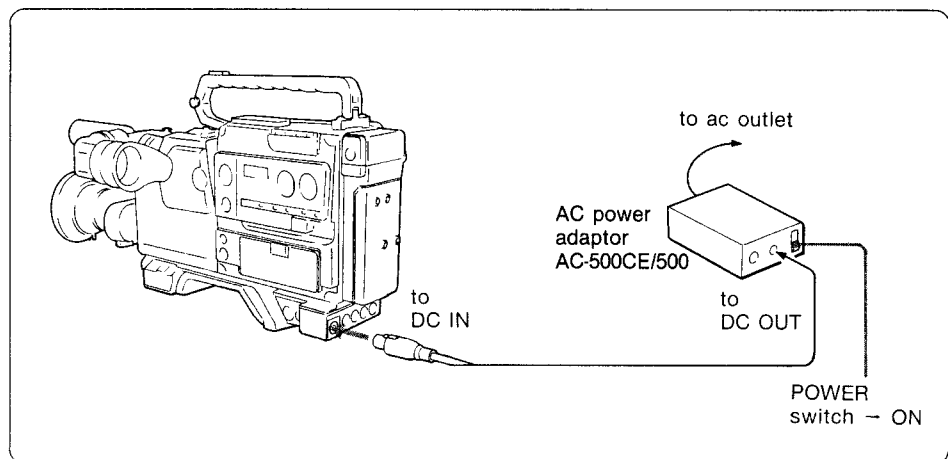
First change the external battery and then, change the battery pack. If you change the battery pack first, the operation will stop then.

- **In case that the battery pack is low when you are using the battery pack as the power source**

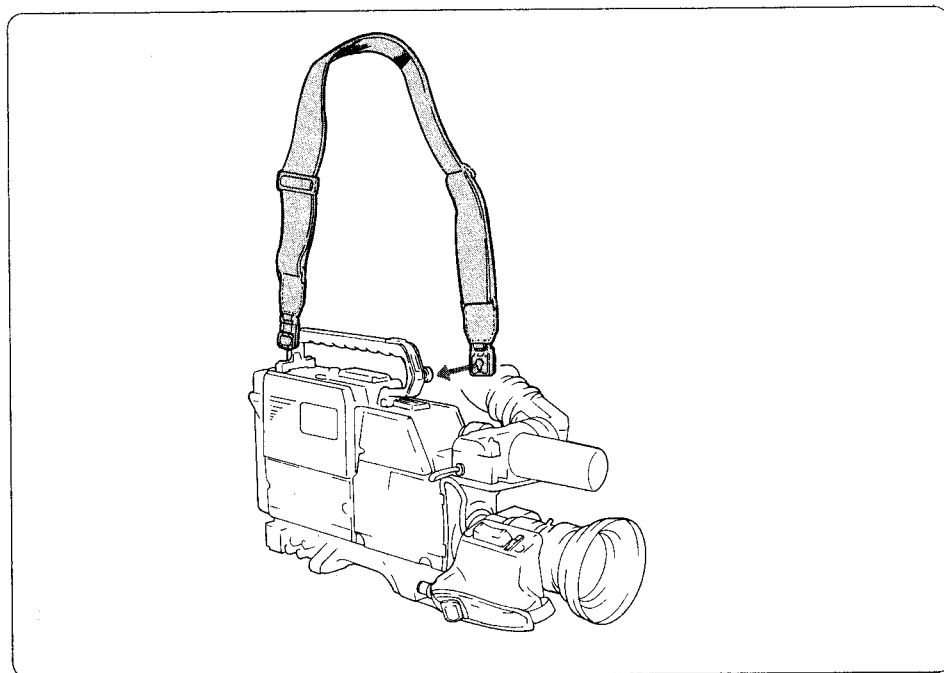
First, connect a fully charged external battery to the DC IN connector, and then remove the discharged battery pack.

AC power

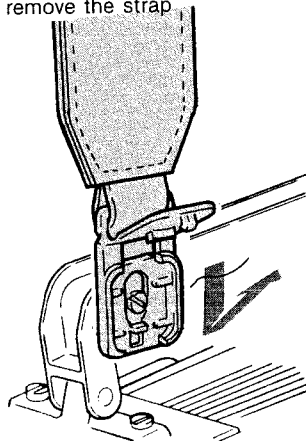
Use an optional AC-500CE/500 AC adaptor.



TO ATTACH THE SHOULDER STRAP



To remove the strap



POWER SOURCES

This unit can be operated with the following power sources.

- An NP-1 or NP-1A rechargeable battery pack
- A BP-90 or BP-90A rechargeable battery pack
- AC power source with an AC-500CE/500 AC power adaptor

Rechargeable battery pack—NP-1 or NP-1A

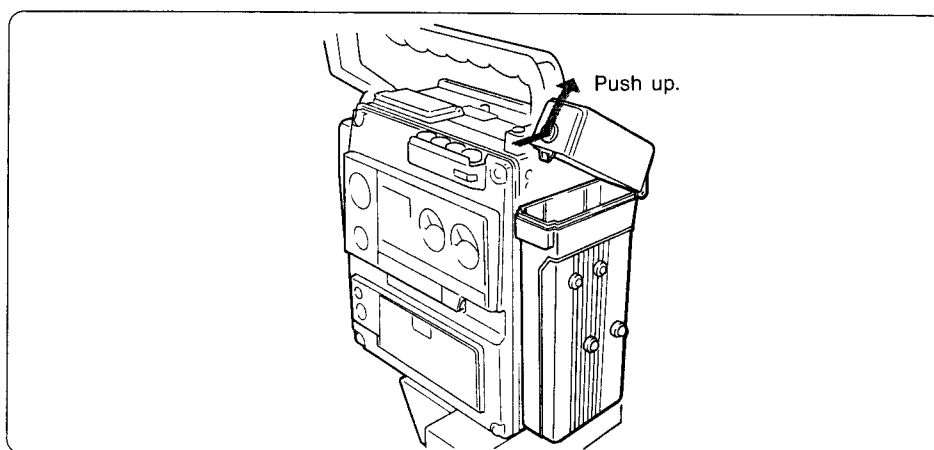
A fully-charged battery provides approximately 50 minutes of continuous operation with a BVP-5P video camera.

Charging

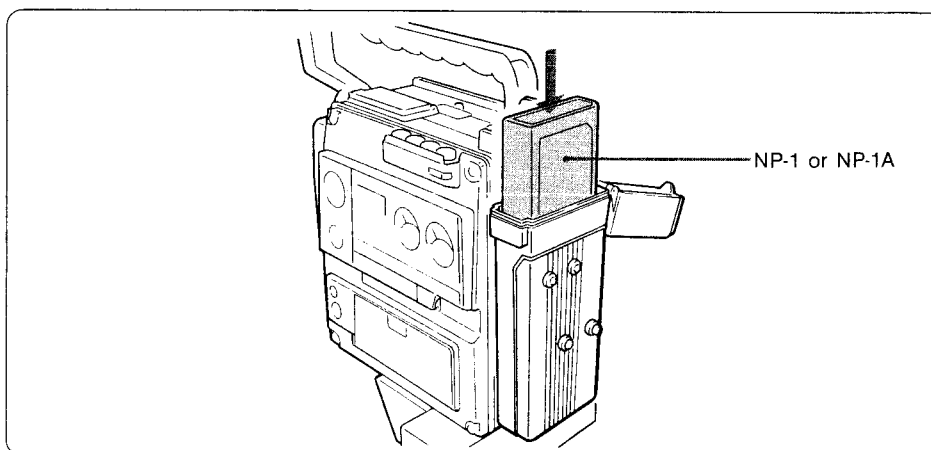
Before operating, always charge the battery pack using the BC-1WACE battery charger. The charging period is approximately 1 hour at normal temperatures. For details on charging, read the instruction manual of the BC-1WACE.

Battery installation

- 1 Open the battery case cover.



- 2 Insert a battery pack.



Notes on battery

- When the battery pack is installed, the power is always supplied to the time code circuit even if the POWER switch is set to OFF. Remove the battery pack from the battery compartment when the unit will not be used for a long period of time.

- The battery pack may not charge if you try to recharge it immediately after it has been used. If this happens, wait for a few minutes before recharging it.

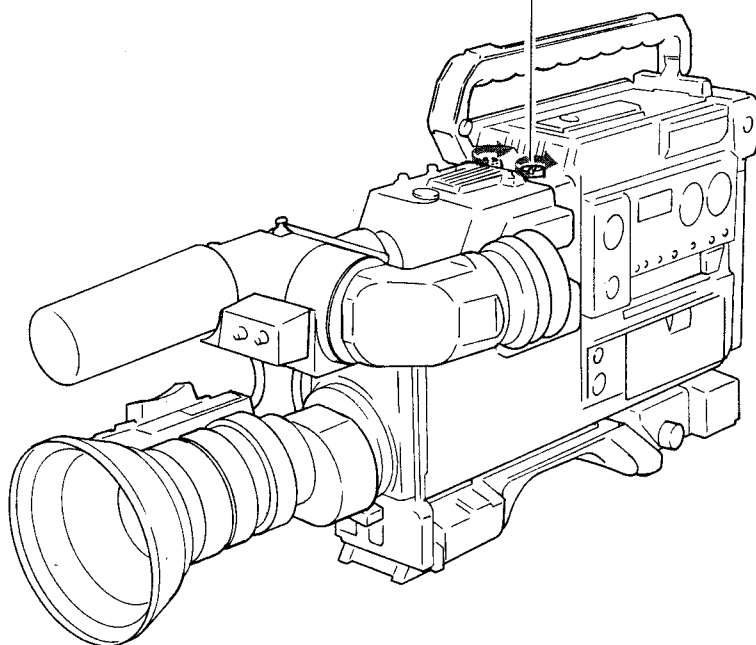
To install two battery packs simultaneously

Use the DC-520 battery adaptor. It is useful for a long time use.



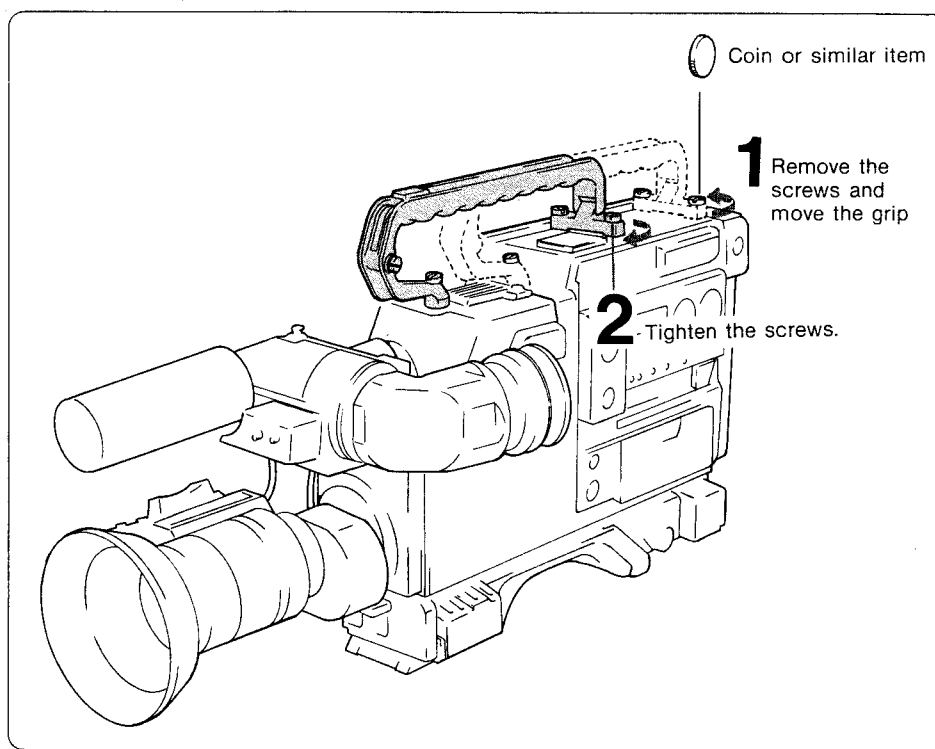
2

Coin or similar
item



TO CHANGE THE GRIP POSITION

When using with the "Betacam" series units, change the grip position for easier carrying.



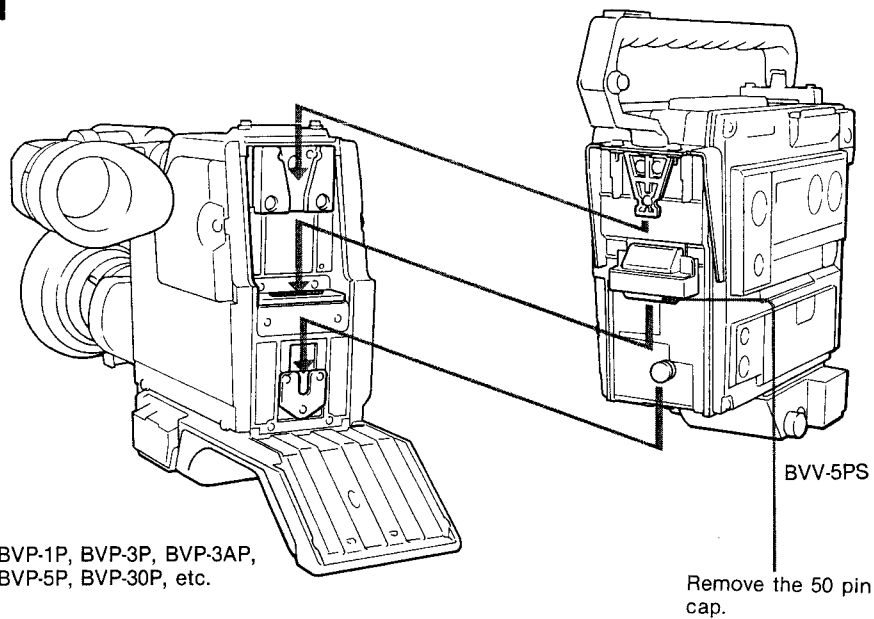
Attach the supplied screws to the holes where the grip was attached.



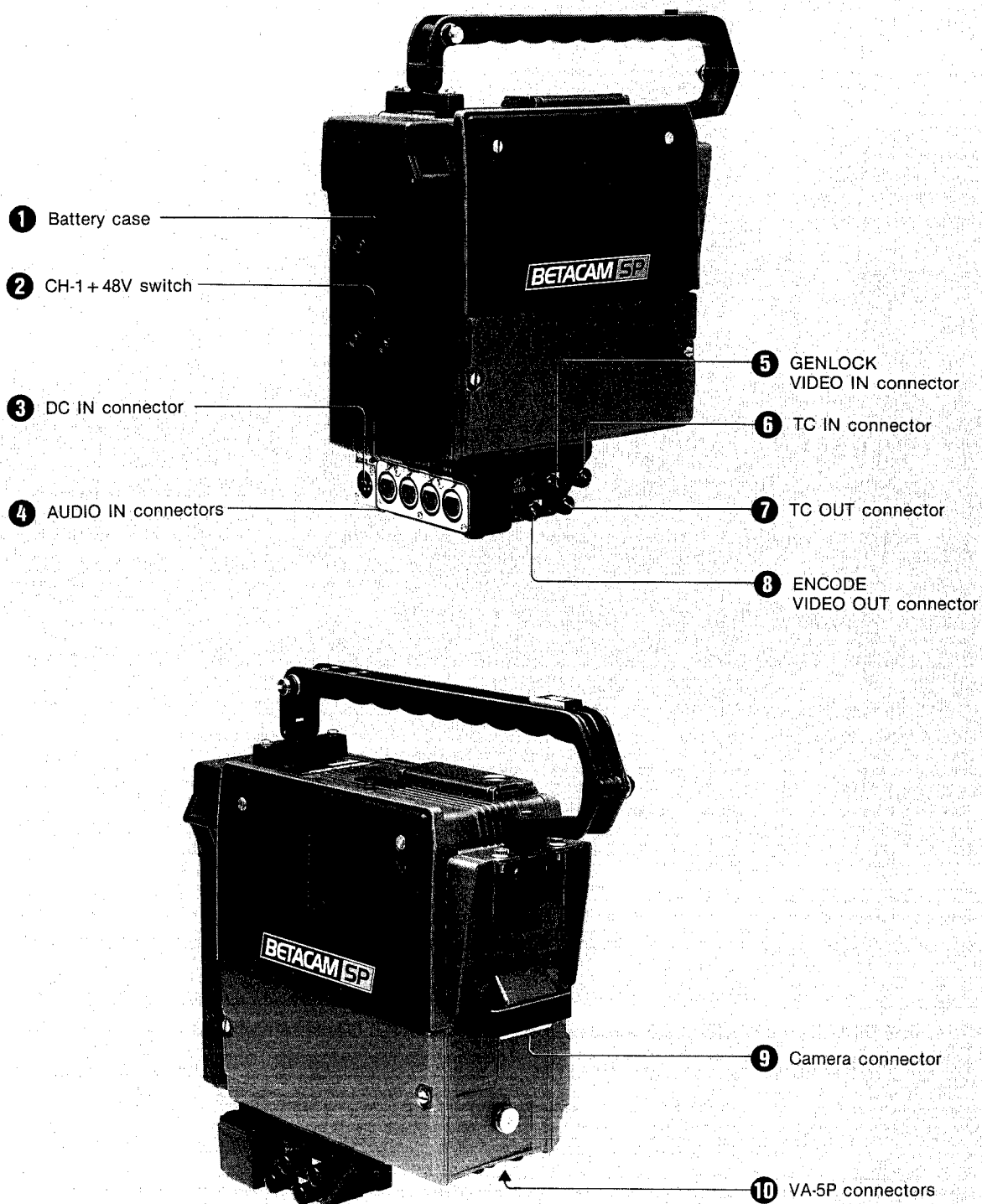
- 1 Battery case**
Install a Sony battery pack NP-1 or NP-1A (optional).
- 2 CH-1 + 48V switch**
Connect the external microphone to the AUDIO IN CH-1 connector. And set the switch to ON to supply power from the unit to the microphone.
- 3 DC IN (external power input) connector (XLR, 4-pin)**
To operate the unit on AC power, connect the DC power cord of an AC-500CE/500 AC adaptor.
- 4 AUDIO IN (input) connectors (XLR, 3-pin)**
Connect audio equipment or a microphone to any of the CH-1 to CH-4 connectors.
- 5 GENLOCK VIDEO IN (video input for time code slave lock) connector (BNC)**
Inputs the reference video signals to lock the built-in time code generator.
- 6 TC IN (time code input for time code slave lock) connector (BNC)**
Inputs the time code to lock the built-in time code generator.
- 7 TC OUT (time code output for time code slave lock) connector (BNC)**
Connect to the TC IN connector of another VTR to lock the built-in time code generator of another VTR to that of this unit.
- 8 ENCODE VIDEO OUT (video output for time code slave lock) connector (BNC)**
Connect to the GENLOCK VIDEO IN connector of another VTR to lock the built-in time code generator of another VTR to that of this unit.
- 9 Camera connector (50-pin)**
Connect to the 50-pin connector on the camera or other equipment.
- 10 VA-5P connectors (4-pin)**
Connect to the BVV-5PS connectors of the VA-5P VTR composite/component adaptor.

TO ASSEMBLE THE VTR AND CAMERA

1



Connector panel





31 VITC (VITC line setting) controls

These controls select the V-blanking lines where VITC is to be inserted. (See the chart below.)

The A control and the B control function separately, allowing for insertion of the same VITC on two different lines.

Switch setting	VITC Insertion line No.
0	Line 7
1	7
2	9
3	10
4	11
5	12
6	13
7	14
8	15
9	16
A	17
B	18
⇒ C	19
D	20
⇒ E	21
F	22

- "⇒" indicates the factory-setting
- VISC has been recorded in LINE 8.

Note

Select lines where no VITS (Vertical Interval Test Signal), VIRS (Vertical Interval Reference Signal) or VISC (Vertical Interval Sub Carrier) is recorded for inserting VITC.

32 AUDIO IN (audio input) switches

Select the sound source to be recorded on audio channel 1 to 4 (CH-1 to CH-4).

CAM: To record the sound from the built-in microphone.

MIC: To record the sound from the microphone connected to the AUDIO IN connectors

LINE: To record the sound from the audio line source connected to the AUDIO IN connectors

33 AFM INPUT switch

Select the signal to be recorded in the AFM mode.

CH-1/CH-2: To record the signal input from the AUDIO IN CH-1 or CH-2 connector with both longitudinal sound and AFM sound simultaneously. The signal input from the AUDIO IN CH-3 or CH-4 connector cannot be recorded.

CH-3/CH-4: To record the signal input from the AUDIO IN CH-3 or CH-4 connector with only AFM sound. The signal input from AUDIO IN CH-1 or CH-2 connector can also be recorded with longitudinal sound.

34 DOLBY NR (Dolby noise reduction) switch

Set to ON to record with the Dolby NR system when using oxide tape. When using metal tape, Dolby NR system functions regardless of the switch position.

35 REAL TIME (time of the day) switch

ON: To record the real time in the VITC user's bit

OFF: To not record the real time in the VITC user's bit

SET: To set the real time

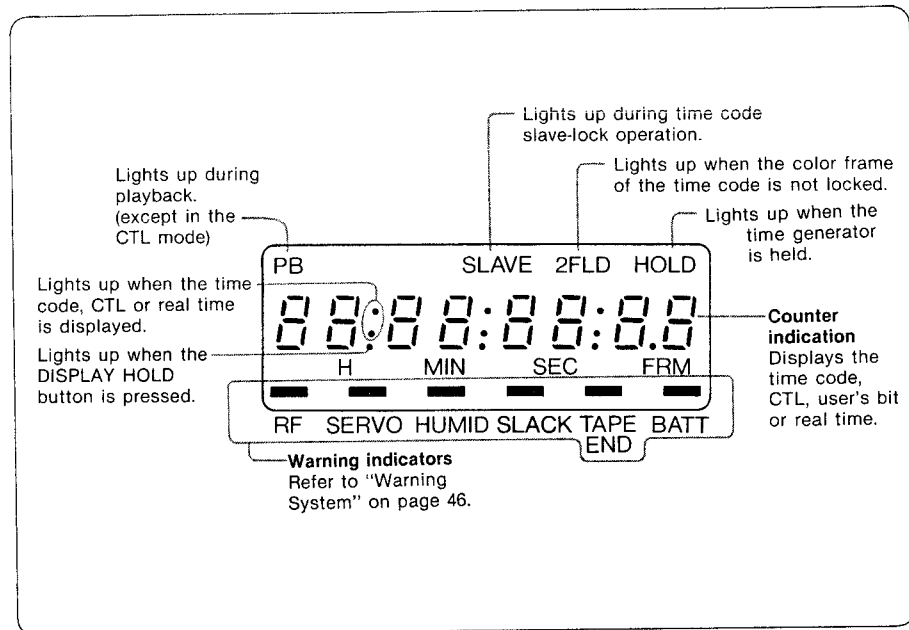
36 F-RUN/R-RUN (free run/recording run) switch

F-RUN: To set the time code by the real time, or to lock the built-in time code generator to an external time code generator. The time code is always generated regardless of the mode of the VTR.

R-RUN: The time code moves only in the record mode. A continuous time code can be recorded throughout the tape.

SET: To set the time code or user's bit

20 Display window



Counter display priority

When setting the switches to each position mentioned below, the item indicated on the counter is as follows:

Priority	Switch position		Indicated item
1	REAL TIME switch → SET		Real time
2	F-RUN/R-RUN switch → SET	DISPLAY switch → TC or CTL	Time code
		DISPLAY switch → U-BIT	User's bit
3	F-RUN/R-RUN switch → F-RUN or R-RUN	DISPLAY switch → CTL	CTL
		DISPLAY switch → TC	Time code
		DISPLAY switch → U-BIT	User's bit

21 RESET (counter reset) button

Press to reset the counter to "00000000" or "00:00:00:00".

The priority for reset is the same as the counter indication priority.

22 DISPLAY HOLD button

Press to stop the display number. Useful for identifying the time when some scene was shot. The generator functions normally while the display is on hold. To release, press again.

Keep pressing this button to display the real time when the DISPLAY switch 25 is set to U-BIT if the real time is set into VITC user's bit (except during playback).

23 ALARM switch

Set to ON so that the alarm sounds when the WARNING lamp 12 lights up or blinks.

Set to OFF to cut off the sound.

24 MONITOR switch

Select the sounds to be monitored from the speaker or earphone.

PB: To monitor simultaneous playback sound during recording

EE: To monitor the E-to-E sound

25 DISPLAY switch

Changes the counter display.

U-BIT: To set or display the user's bit, or to display the real time set into VITC user's bit

TC: To set or display the time code

CTL: To display the CTL

26 LIGHT switch

Set to ON to illuminate the display window or the level meters.

27 EARPHONE jack (mini jack)

Connect an 8-ohm earphone. Select the sounds to be monitored with the MONITOR switch 24.

The warning sound corresponding to the warning lamp or indicators is also heard.

When an earphone is connected, the sound from the speaker 6 is cut off.

28 SHIFT button

Press so that the number you want to set blinks. The blinking digit shifts to the right with each press.

29 ADVANCE button

Press to increase the blinking number. Keep pressing to increase continuously.

30 HOURS METER

Indicates the total elapsed time that the video head drum has rotated.

Replace with new one when the meter shows the maximum number of hours (1000 hours).

16 MONITOR SELECT switches

Select the audio channel to be displayed on the level meter or select the channel to be heard from the speaker or the earphone.

Switch position		The level meter displays input level of		Speaker or earphone outputs
Left side (CH-1/3 MIX CH-2/4)	Right side (LNG/AFM)	Left side (CH-1/CH-3)	Right side (CH-2/CH-4/ BATT)	
CH-1/CH-3	LNG	Audio channel 1	Audio channel 2	Audio channel 1 sound
	AFM	Audio channel 3	Audio channel 4	Audio channel 3 sound
MIX	LNG	Audio channel 1	Audio channel 2	Mixed sound of audio channels 1 and 2
	AFM	Audio channel 3	Audio channel 4	Mixed sound of audio channels 3 and 4
CH-2/CH-4	LNG	Audio channel 1	Audio channel 2	Audio channel 2 sound
	AFM	Audio channel 3	Audio channel 4	Audio channel 4 sound

17 AUDIO SELECT switches

Select if audio channels 1 or 2 input level can be adjusted manually or automatically.

AUTO: To adjust automatically

MAN: To adjust manually

The input level of the audio channels 3 and 4 cannot be adjusted automatically.

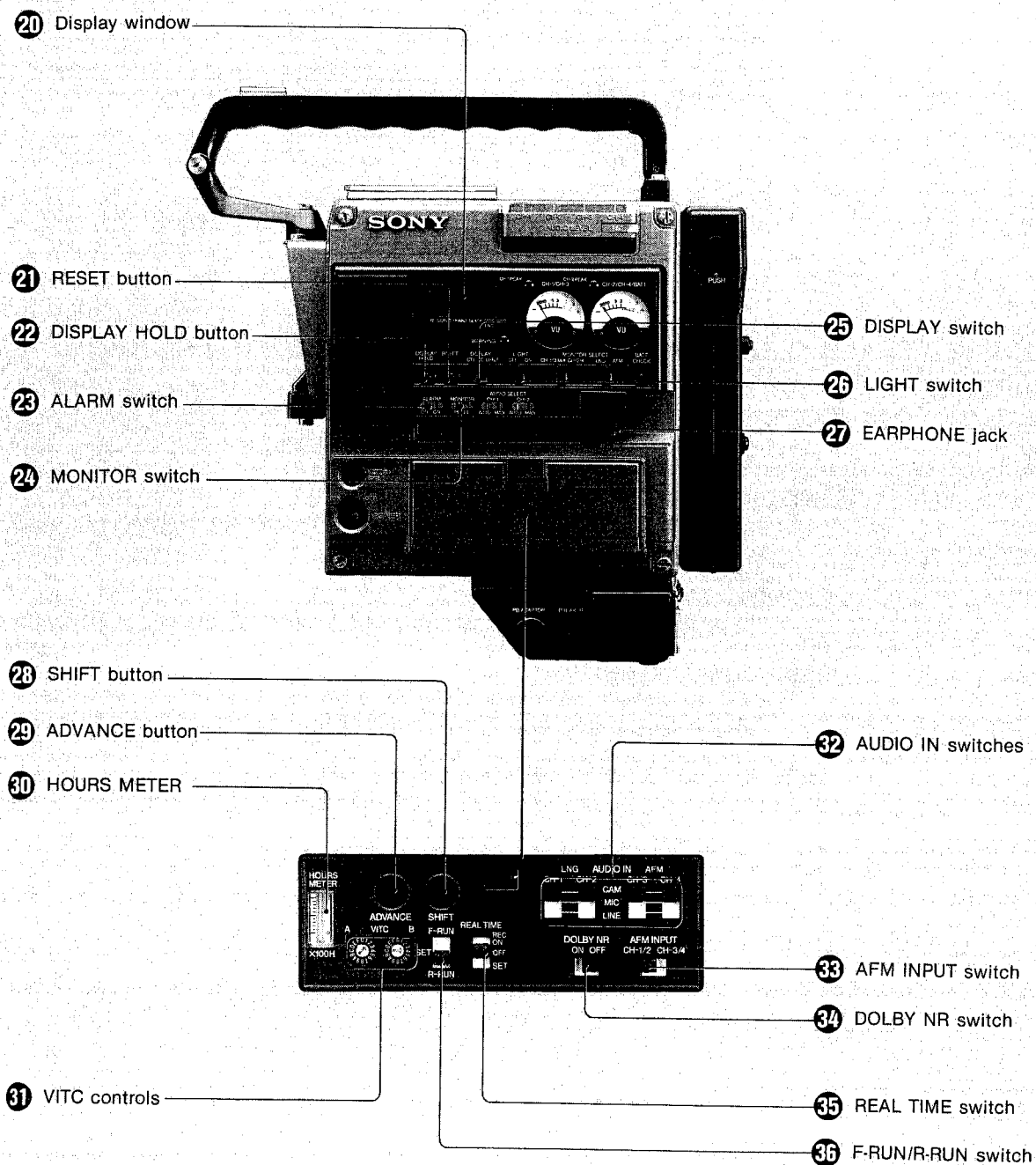
18 BREAKER button

When excessive current flows during operation, the power to this unit is cut off. After checking inside the unit, press this button to restore the power to the unit.

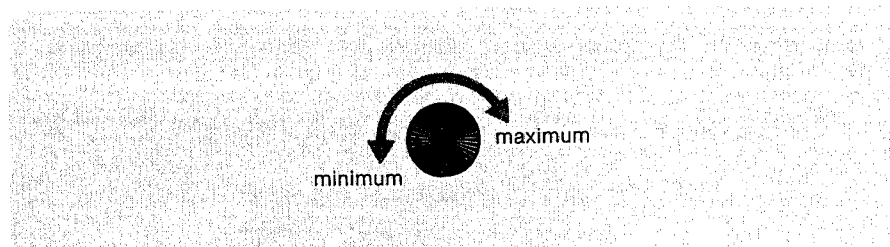
19 PB ADAPTOR (playback adaptor) connector (20-pin)

Connect to a TV or color monitor using a VA-500P playback adaptor (optional) to monitor the playback picture in color.

Operation panel 2



- ① **▲ EJECT (cassette eject) button**
- ② **◀ REW (rewind) button and lamp**
- ③ **▶▶ F FWD (fast forward) button and lamp**
- ④ **▶ PLAY (playback) button and lamp**
Press to play back through the viewfinder or using the playback adaptor VA-500P (optional).
- ⑤ **■ STOP button**
Press to stop the tape transport.
- ⑥ **Speaker**
During recording, E-to-E sound* or simultaneous playback sound (for audio channels 3 and 4, E-to-E sound only) can be monitored. Also, when the warning lamp or indicator blinks or lights up, an alarm will sound. When an earphone is connected to the EARPHONE jack ⑦, the sound from the speaker is cut off.
- ⑦ **Volume control**
Adjusts the sound level from the speaker or earphone.



At the minimum position, no sound can be heard.

- ⑧ **CTDM PB (Compressed Time Division Multiplex) button**
Press to monitor the chrominance signal.
During recording, keep pressing the CTDM PB button and RET button on the lens simultaneously.
During playback, keep pressing the CTDM PB button.
- ⑨ **POWER switch**
Set to ON to turn on the main power for both the VTR and camera.
To turn the power off, set the switch to OFF.
- ⑩ **AUDIO LEVEL controls**
Turn to the right or left to adjust the recording level. To adjust the CH-1 or CH-2 control, set the AUDIO SELECT CH-1 or CH-2 switch to MAN.
- ⑪ **REC (recording) lamp**
Lights up during recording.

* E-to-E (Electronics to Electronics) sound
E-to-E sound refers to the input audio signal which has passed through the recorder's electronic system together with the video signal and is supplied from the output connector.

12 WARNING lamp

Blinks or lights up when one or more warning indicators on the display window **20** blink or light up.

Blinks when

- the recording cannot be made because of some problem in the recording circuit.
- the drum servo is not locked.
- the heads are contaminated.
- the tape is slack.
- the tape is nearly at its end.
- the battery is nearly exhausted.

Lights up when

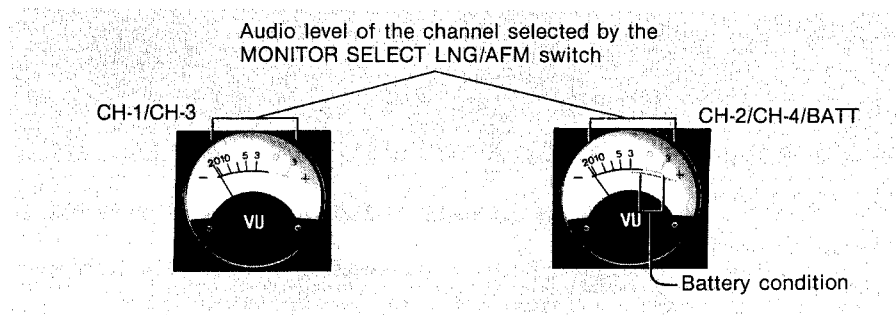
- moisture has condensed on the head drum.
- the tape is at its end.
- the battery is exhausted.

13 CH-1 PEAK/CH-2 PEAK (audio channel 1, 2 peak level) lamps

Light up when audio channels 1 or 2 input increase by +6 dB.

14 Level meters

Indicate the level of audio channels 1 and 2 when the MONITOR SELECT LNG/AFM switch **16** is set to LNG, and the level of audio channels 3 and 4 when the switch is set to AFM. The righthand meter (CH-2/CH-4/BATT) indicates the battery condition when the BATT CHECK button **15** is pressed.

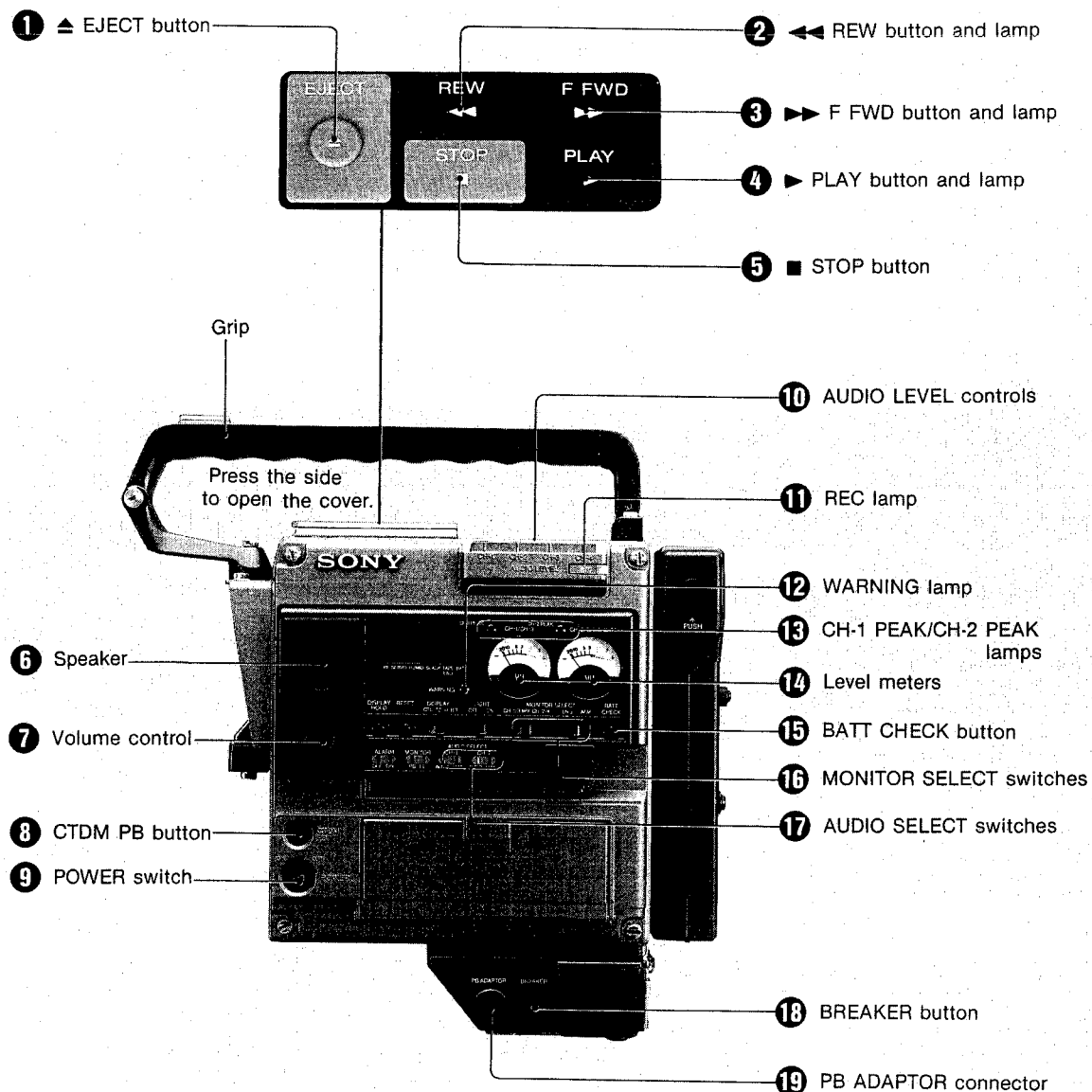


15 BATT CHECK (battery check) button

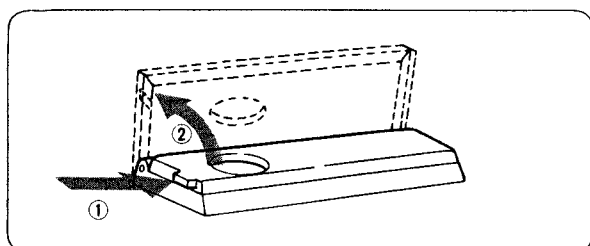
Press to confirm the approximate voltage of the battery pack installed or the power source connected to the DC IN connector.

LOCATION AND FUNCTION OF PARTS

Operation panel 1



To open the cover



OUTLINE

The BVV-5PS is the portable in-camera video cassette recorder for the "Betacam SP" (Superior Performance) series. With a Sony portable color video camera, this unit forms the "Betacam" system. Compact, lightweight and easy-to-operate "Betacam" system makes one-person camera recording much easier.

"Betacam SP" format

The BVV-5PS achieves high quality picture and sound owing to the "Betacam SP" format, which has wider frequency response, higher S/N ratio.

Metal tape use

Using metal tape* permits high quality recording of the "Betacam SP". The use of oxide tape results in a standard, non SP, recording. The unit automatically distinguishes whether the tape is metal or oxide.

4-channel audio recording/playback

When a metal tape is used, two channels of frequency modulated sound (AFM) can be recorded on a chrominance track with frequency multiplexed in addition to the conventional 2-channel audio recording on longitudinal tracks (LNG). With the AFM recording, wide dynamic range can be obtained which makes it possible to get high quality sound under severe conditions. The conventional recording on longitudinal track also improves the frequency characteristics and reduces distortion using a metal tape.

Playback on the conventional units

The tape recorded on this unit can be played back on conventional units. However, the conventional unit cannot show the special quality of a tape recorded on the BVV-5PS.

Video and audio confidence playback

During recording, the luminance playback picture can be monitored through the viewfinder. The two CTDM chrominance signals can also be monitored separately. This is useful for confirming if the recording has been made correctly.

Low power consumption

The BVV-5PS has low power consumption—14W when using metal tape.

Playback function

Playback picture can be monitored through the viewfinder in black and white. Using the optional playback adaptor VA-500P, playback picture can be monitored through the TV or color monitor in color.

* Metal tape cassette size

There are two sizes of cassette in metal tape—small (conventional) size and large size. The large size cassette allows you to play back or record for long time. However, the large cassette cannot be used in this unit.

Recording review function

The last few seconds of the recorded scene can be rewound, and then played back to check the previous recording.

Built-in time code generator/reader

The LTC (Longitudinal Time Code) and VITC (Vertical Interval Time Code) can be recorded, and also the LTC can be played back.
The real time (time of the day) can be recorded on the VITC user's bit.

Time code slave-lock

The built-in time code generator can be locked to an external time code generator.

Audio level adjustment on the camera

When the BVV-5PS is used with a "Betacam" system camera having an audio level adjustment control, the recording level of audio channel 1 can be adjusted and monitored on the camera.

Dolby* NR (noise reduction) C-type


The C-type Dolby NR system is employed for improved S/N ratio and wider dynamic range.

BP-90/90A battery pack (optional) for extended operation

BP-90/90A can be used with the optional DC-500 battery case. The BP-90/90A allows operation for a long period of time.

Frame accurate back space editing

Automatic back space editing is possible not only in the stand-by mode (CAMERA/VTR switch of the camera set to VTR STBY) but also in the save mode (CAMERA/VTR switch of the camera set to VTR SAVE).

*Dolby noise reduction manufactured under licence from
Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D  are trademarks of Dolby
Laboratories Licensing Corporation.

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Der Betrieb des „Betacam“-Systems ist in der Betriebs- und Wartungsanleitung der Kamera beschrieben. Einzelheiten entnehmen Sie bitte dieser Anleitung.